



# Spectral Gamma-Ray Borehole Log Data Report

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Borehole

# 20-01-07

Log Event A

## Borehole Information

Farm : <u>B</u>	Tank : <u>B-101</u>	Site Number : <u>299-E33-263</u>
N-Coord : <u>45,195</u>	W-Coord : <u>52,582</u>	TOC Elevation : <u>654.50</u>
Water Level, ft :	Date Drilled : <u>5/31/1974</u>	

## Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

## Borehole Notes:

A driller's log was not available for this borehole. Chamness and Merz (1993) indicate this borehole was drilled in May 1974 to a depth of 100 ft using 6-in. casing. Chamness and Merz (1993) do not mention whether the borehole was perforated or grouted.

The casing thickness for the 6-in. borehole is assumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. casing.

The top of the casing is the zero reference for the log. The casing lip is approximately even with the ground surface.

## Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>04/1997</u>	Calibration Reference : <u>GJO-HAN-14</u>	Logging Procedure : <u>P-GJPO-1783</u>

## Logging Information

Log Run Number : <u>1</u>	Log Run Date : <u>08/26/1997</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>18.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

  

Log Run Number : <u>2</u>	Log Run Date : <u>08/27/1997</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>97.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>17.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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**Logging Operation Notes:**

This borehole was logged in two log runs. The total logging depth achieved by the SGLS was 97.5 ft.

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**Analysis Information**

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Analyst : S.D. Barry

Data Processing Reference : MAC-VZCP 1.7.9

Analysis Date : 04/09/1998

**Analysis Notes :**

The pre- and post-survey field verification spectra for all logging runs met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from these spectra were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing (based on a 6-in., schedule-40 pipe) were applied to the entire logged interval during the analysis process.

**Log Plot Notes:**

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations. Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

A time-sequence plot of the historical gross gamma log data from 1975 to 1980 is presented with the SGLS log plots. A plot of the observed decay of gamma activity at 51 ft is also included.

**Results/Interpretations:**

The only man-made radionuclide detected around this borehole was Cs-137. Several zones of intermittent and continuous Cs-137 contamination were detected at low concentrations from the ground surface to a depth of 23.5 ft.

Historical gross gamma logs indicate that anomalous gamma-ray activity occurred between 49 and 54 ft from 1975 to 1979. However, no man-made radionuclides were identified by the SGLS within this depth region.

The K-40 and Th-232 concentration values increase at a depth of about 51 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank B-101.